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ABSTRACT

Many teachers accept science literacy as an important goal for K-12 education; however, those without a strong background in science, mathematics, and technology may be unsure of how to teach important ideas from these fields to their students. As part of its comprehensive effort to reform K-12 education, Project 2061 of the American Association for the Advancement of Science (AAAS) has begun to address this problem by developing a database of trade books on topics central to science literacy. The database is designed to help teachers better understand a specific set of learning goals for their students by linking directly to recommendations in Science for All Americans (SFAA), a report that includes a set of recommendations about what scientifically literate citizens should know and be able to do. This digest describes the database and lists trade books identified as providing reliable information on ideas central to scientific literacy. The books are grouped according to the chapters in SFAA to which they correspond: (1) The Nature of Science: (2) The Nature of Mathematics; (3) The Nature of Technology; (4) The Physical Setting; (5) The Living Environment; (6) The Human Organism; (7) Human Society; (8) The Designed World; (9) The Mathematical World; (10) Historical Perspectives; (11) Common Themes; and (12) Habits of the Mind. Internet resources are also included. (JRH)

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Books to Help Teachers Achieve Science Literacy

by
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Books to Help Teachers Achieve Science Literacy

Ann Cwiklinski, Beth Czapla, & Luli Stern

September 1996

ERIC Clearinghouse for Science, Mathematics, and Environmental Education DIGEST

Many teachers accept science literacy as an important goal for K-12 education. Those without a strong background in science, mathematics, and technology, however, may be unsure of how to teach important ideas from these fields to their students. The American Association for the Advancement of Science (AAAS) provided some direction with its report, *Science for All Americans (1989)*, that includes a set of recommendations about what scientifically literate citizens should know and be able to do. A companion report, *Benchmarks for Science Literacy* (1993), elaborates the expected progress that students should make toward science literacy by recommending what students should know and be able to do at certain grade levels. Many of the ideas and recommendations found in these two reports have subsequently influenced formulation of *National Science Education Standards* (National Resarch Council, 1996) as well as numerous state and local curriculum frameworks.

But where can teachers turn to strengthen their own understanding of science ideas and bring substance to local, state, and national standards? As part of its comprehensive effort to reform K-12 education, Project 2061 of the AAAS has begun to address this problem, recently developing a database of trade books on topics central to science literacy. The database is designed to help teachers better understand a specific set of learning goals for their students by linking directly to recommendations in *Science for All Americans*. Though broad in scope, *Science for All Americans* focuses on ideas central to science literacy, deliberately omitting less crucial topics, however popular in today's curriculum materials and classrooms.

The Database

Project 2061's trade books database contains 120 entries describing nonfiction science books, collections of essays, philosophical works, and even works of fiction likely to enrich the reader's understanding of some important ideas in science, mathematics, or technology. Textbooks or reference works have been deliberately omitted in favor of books that cover a few important topics in depth. Many of the books are written by well-known scientists and engineers who are also accomplished writers, able to make complex ideas intelligible to the lay reader. Because most teachers will be knowledgeable about some of the topics in *Science for All Americans* but less familiar with others, the selected trade books range from basic introductions—some actually written with young adults in mind—to more sophisticated treatments requiring considerable background knowledge.

Books in the database meet three criteria: (1) they explicity address content in *Science for All Americans*, (2) they come highly rated by *Science Books & Films* or a similar credible source, and (3) they are likely to be of interest to a general audience, including teachers of all grades and subjects. All were published within the past 10 years, with the exception of a few older books that remain unsurpassed in dealing with a particular topic.

Each entry in the trade books database includes full bibliographic information, a table of contents (when one exists), other descriptive data, and a review. Links to specific chapters and sections of Science for All Americans allow users to search systematically for books dealing with a specific idea or topic from that report. Or, users can follow their own interests and browse less systematically through as few or as many database entries as they wish.

The Books

Following are the trade books identified as providing reliable information on ideas central to scientific literacy. The books are grouped according to the chapters in *Science for All Americans (SFAA)* to which they are related.

The Nature of Science
(SFAA Chapter 1)

Animal Experimentation: Cruelty or Science? by Nancy Day, Enslow, 1994

Apprentice to Genius: The Making of a Scientific Dynasty, by Robert Kanigel, Macmillan, 1986

Bad Science, by Gary Taubes, Random House, 1993

Bitten by the Biology Bug, by Maura C. Flannery, National Association of Biology Teachers, 1991 [ED 338 485]

Blueprints: Solving the Mystery of Evolution, by Maitland A. Edey and Donald C. Johanson, Little, Brown, 1989

The Common Sense of Science, by Jacob Bronowski, Harvard University Press, 1978

Great Essays in Science, by Martin Gardner (Ed.), Prometheus Books, 1994

How We Know: An Exploration of the Scientific Process, by Martin Goldstein and Inge F. Goldstein, Plenum, 1978

I Want to Be a Mathematician: An Automathography, by Paul R. Halmos, Springer-Verlag, 1985

Late Night Thoughts on Listening to Mahler's Ninth Symphony, by Lewis Thomas, Viking, 1983

Mayonnaise and the Origin of Life: Thoughts of Minds and Molecules, by Harold J. Morowitz, Charles Scribner's Sons, 1985

A Physicist on Madison Avenue, by Tony Rothman, Princeton University Press, 1991

Radioactivity: From the Curies to the Atomic Age, by Tom McGowen, FranklinWatts, Inc., 1986

Rats, Lice and History, by Hans Zinsser, Little, Brown, 1934

The Science Gap: Dispelling the Myths and Understanding the Reality of Science, by Milton A. Rothman, Prometheus Books, 1992

The Scientific Attitude, 2nd ed., by Frederick Grinnell, The Guilford Press, 1992

The Search for Solutions, by Horace Freeland Judson, Holt, Rinehart and Winston, 1980

Signs of Life, by Robert Pollack, Houghton Mifflin/Viking, 1994

To Know a Fly, by Vincent Gaston Dethier, Holden-Day, Inc., 1963

The Virgin and the Mousetrap: Essays in Search of the Soul of Science, by Chet Raymo, Viking, 1991

The World of Mathematics, by James R. Newman, Simon & Schuster, 1956

The Nature of Mathematics
(SFAA Chapter 2)

Archimedes' Revenge: The Joys and Perils of Mathematics, by Paul Hoffman, Fawcett Crest, 1988

How We Know: An Exploration of the Scientific Process, by Martin Goldstein and Inge F. Goldstein, Plenum, 1978

I Want to Be a Mathematician: An Automathography, by Paul R. Halmos, Springer-Verlag, 1985

The Mathematical Universe, by William Dunham, John Wiley & Sons, 1994

One Two Three...Infinity, by George Gamow, Dover, 1947

Recent Revolutions in Mathematics, by Albert

Stwertka, Franklin Watts, Inc., 1987
The Refrigerator and the Universe: Understanding the Laws of Energy, by Martin Goldstein and Inge F. Goldstein, Harvard University Press, 1993
The World of Mathematics, by James R. Newman, Simon & Schuster, 1956

The Nature of Technology
(SFAA Chapter 3)

The Control Revolution: Technical and Economic Origins of the Information Society, by James R. Beniger, Harvard University Press, 1986
The Day the Sun Rose Twice, by Ferenc Morton Szasz, University of New Mexico Press, 1984
The Design of Everyday Things, by Donald A. Norman, Doubleday (originally The Psychology of Everyday Things, Basic Books), 1988
Discovery, Innovation and Risk: Case Studies in Science and Technology, by Newton H. Copp and Andrew W. Zanella, MIT Press, 1993
Engineering and the Mind's Eye, by Eugene S. Ferguson, MIT Press, 1992
Engines of Change: The American Industrial Revolution, 1790-1860, by Brooke Hindle and Steven Lubar, Smithsonian Institution Press, 1986
Flying Buttresses, Entropy, and O-Rings: The World of an Engineer, by James L. Adams, Harvard University Press, 1992
Inventors at Work: Interviews with 16 Notable American Inventors, by Kenneth A. Brown, Tempus, 1988
Medical Technology and Society, by Joseph D. Bronzino, Vincent H. Smith, and Maurice L. Wade, McGraw-Hill, 1990
The Nuclear Energy Option: An Alternative for the '90s, by Bernard L. Cohen, Plenum, 1990
The Search for Solutions, by Horace Freeland Judson, Holt, Rinehart and Winston, 1980
Supercomputing and the Transformation of Science, by William J. Kaufmann III and Larry L. Smarr, Scientific American Library, 1993
Superstuff! by Fred Bortz, FranklinWatts, Inc., 1990
Technologies Without Boundaries: On Telecommunications in a Global Age, by Ithiel De Sola Pool, Harvard University Press, 1990
Technology and the Future, 6th ed., by Albert H. Teich (Ed.), St. Martin's Press, 1993
To Engineer Is Human, by Henry Petroski, Random House, 1982
Works of Man, by Ronald W. Clark, Viking, 1985

The Physical Setting
(SFAA Chapter 4)

Atom: Journey Across the Subatomic Cosmos, by Isaac Asimov, Dutton/ Signet, 1991
Beginnings: The Story of Origins-Of Mankind, Life, the Earth, the Universe, by Isaac Asimov, Walker & Co., 1987
An Equation That Changed the World: Newton, Einstein, and the Theory of Relativity, by Harald Fritzsch and translated by Karin Heusch, University of Chicago Press, 1994
From Stone to Star: A View of Modern Geology, by Claude Allegre and translated by Deborah Kurmes Van Dam, Harvard University Press, 1992
Isaac Asimov's Guide to Earth and Space, by Isaac Asimov, Random House, 1991
Knowledge and Wonder-The Natural World as Man Knows It, by Victor F. Weisskopf, Doubleday, 1979
Lonely Hearts of the Cosmos: The Story of the Scientific Quest for the Secret of the Universe, by Dennis Overbye, HarperCollins, 1991
Nuclear Choices: A Citizen's Guide to Nuclear Technology, by Richard Wolfson, MIT Press, 1991
A Physicist on Madison Avenue, by Tony Rothman, Princeton University Press, 1991
Physics for Poets, by Robert H. March, McGraw-Hill, 1992
Physics: From Newton to the Big Bang, by Albert and Eve Stwertka, Franklin Watts, Inc., 1986
Planet Earth, by Jonathan Weiner, Bantam, 1986
Powers of Ten: A Book about the Relative Size of Things in the Universe and the Effect of Adding Another Zero, by Philip and Phylis Morrison and the office of Charles and Ray Eames, Scientific American Library, 1994
Recent Revolutions in Mathematics, by Albert Stwertka, Franklin Watts, Inc., 1987
The Refrigerator and the Universe: Understanding the Laws of Energy, by Martin Goldstein and Inge F. Goldstein, Harvard University Press, 1993
Seven Ideas That Shook the Universe, by Nathan Spielberg and Bryon D. Anderson, John Wiley & Sons, 1987
Stephen Hawking's Universe, by John Boslough, Quill/ Morrow, 1985
Superstuff! by Fred Bortz, Franklin Watts, Inc., 1990

The Living Environment
(SFAA Chapter 5)

The Beak of the Finch: A Story of Evolution in Our Time, by Jonathan Weiner, Knopf, 1994
Beauty and the Beast: The Coevolution of Plants and Animals, by Susan Grant, Charles Scribner's Sons, 1984
Beginnings: The Story of Origins-Of Mankind, Life, the Earth, the Universe, by Isaac Asimov, Walker & Co., 1987
Bitten by the Biology Bug, by Maura C. Flannery, National Association of Biology Teachers, 1991
Blueprints: Solving the Mystery of Evolution, by Maitland A. Edey and Donald C. Johanson, Little, Brown, 1989
The Body, by Anthony Smith, Viking, 1986
Cells, by George S. Fichter, Franklin Watts, Inc., 1986
The Creation of Life: Past, Future, Alien, by Andrew Scott, Basil Blackwell, 1986
Diatoms to Dinosaurs: The Size and Scale of Living Things, by Chris McGowan, Island Press, 1994
Ever Since Darwin: Reflections in Natural History, by Stephen Jay Gould, W. W. Norton, 1977
Extinction, by Rebecca Stefoff, Chelsea House Publishers, 1992
The Flamingo's Smile: Reflections in Natural History, by Stephen Jay Gould, Norton, 1985
The Flight of the Iguana: A Sidelong View of Science and Nature, by David Quammen, Delacorte Press, 1988
Gene Future: The Promise and Perils of the New Biology, by Thomas F. Lee, Plenum, 1993
Global Ecology, by Colin Tudge, Oxford University Press, 1991
Knowledge and Wonder-The Natural World as Man Knows It, by Victor F. Weisskopf, Doubleday, 1979
The Language of Genes, by Steve Jones, Anchor/ Doubleday, 1994
The Lives of a Cell: Notes of a Biology Watcher, by Lewis Thomas, Viking, 1974
Mammal Evolution: An Illustrated Guide, by R. J. G. Savage, Facts On File, 1986
Mayonnaise and the Origin of Life: Thoughts of Minds and Molecules, by Harold J. Morowitz, Charles Scribner's Sons, 1985
The New Biology: Discovering the Wisdom in Nature, by Robert Augros and George Stanciu, Shambhala Publications Inc., 1987
New Theories on the Origins of the Human Race, by Christopher Lampton, Franklin Watts, Inc., 1989
Signs of Life, by Robert Pollack, Houghton Mifflin/Viking, 1994
A View from the Heart: Bayou Country Ecology, by June C. Kennedy, Blue Heron Press, 1991
The Virgin and the Mousetrap: Essays in Search of the Soul of Science, by Chet Raymo, Viking, 1991
Was George Washington Really the Father of Our Country? A Clinical Geneticist Looks at World History, by Robert Marion, Addison-Wesley, 1994
What Makes You What You Are: A First Look at Genetics, by Sandy Bornstein, Messner, 1989
The World of Microbes, by Howard Gest, Science Tech, 1987

The Human Organism
(SFAA Chapter 6)

The Ascent of Man, by Jacob Bronowski, Little, Brown, 1974
Beginnings: The Story of Origins-Of Mankind, Life, the Earth, the Universe, by Isaac Asimov, Walker & Co., 1987
Bitten by the Biology Bug, by Maura C. Flannery, National Association of Biology Teachers, 1991
Blueprints: Solving the Mystery of Evolution, by Maitland A. Edey and Donald C. Johanson, Little, Brown, 1989
The Body, by Anthony Smith, Viking, 1986
The Body in Time, by Kenneth Jon Rose, John Wiley & Sons, 1988
The Brain, by Richard M. Restak, Bantam, 1984

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Ever Since Darwin: Reflections in Natural History, by Stephen Jay Gould, W. W. Norton, 1977
Global Ecology, by Colin Tudge, Oxford University Press, 1991
Late Night Thoughts on Listening to Mahler's Ninth Symphony, by Lewis Thomas, Viking, 1983
The Lives of a Cell: Notes of a Biology Watcher, by Lewis Thomas, Viking, 1974
Mammal Evolution: An Illustrated Guide, by R. J. G. Savage, Facts On File, 1986
The Man Who Mistook His Wife for a Hat, by Oliver Sacks, Harper & Row, 1985
Microbe Hunters, by Paul de Kruif, Harcourt Brace Jovanovich, 1926
The Mind, by Anthony Smith, Viking, 1984
The New Biology: Discovering the Wisdom in Nature, by Robert Augros and George Stanciu, Shambhala, 1987
New Theories on the Origins of the Human Race, by Christopher Lampton, Franklin Watts, Inc., 1989
Rats, Lice and History, by Hans Zinsser, Little, Brown & Co., 1934
Traces of Life: The Origins of Humankind, by Kathryn Lasky, William Morrow & Co., 1989
The Virus Invaders, by Alan E. Nourse, Franklin Watts, Inc., 1992
Was George Washington Really the Father of Our Country? A Clinical Geneticist Looks at World History, by Robert Marion, Addison-Wesley, 1994
What Makes You What You Are: A First Look at Genetics, by Sandy Bornstein, Messner, 1989
The World of Microbes, by Howard Gest, Science Tech, 1987
The Youngest Science: Notes of a Medicine-Watcher, by Lewis Thomas, Viking, 1983

Human Society
(SFAA Chapter 7)

The Control Revolution: Technical and Economic Origins of the Information Society, by James R. Beniger, Harvard University Press, 1986
Economics Explained: Everything You Need to Know about How the Economy Works and Where It's Going, by Robert L. Heilbroner and Lester C. Thurow, Simon & Schuster/Touchstone, 1994
Economy and Society, by Robert J. Holton, Routledge, 1992
A History of Private Life: Riddles of Identity in Modern Times, by Antoine Prost and Gérard Vincent (Eds.), translated by Arthur Goldhammer, Harvard University Press, 1991
The Human Cycle, by Colin M. Turnbull, Simon & Schuster, 1983
Man on Earth, by John Reader, University of Texas Press, 1988
Metaman: The Merging of Humans and Machines into a Global Superorganism, by Gregory Stock, Simon & Schuster, 1993
So Shall You Reap: Farming and Crops in Human Affairs, by Otto T. Solbrig and Dorothy J. Silbrig, Island Press, 1994

The Designed World
(SFAA Chapter 8)

The Age of Electronic Messages, by John G. Truxal, MIT Press, 1990
The Control Revolution: Technical and Economic Origins of the Information Society, by James R. Beniger, Harvard University Press, 1986
The Day the Sun Rose Twice, by Ferenc Morton Szasz, University of New Mexico Press, 1984
Discovery, Innovation and Risk: Case Studies in Science and Technology, by Newton H. Copp and Andrew W. Zanella, MIT Press, 1993
Energy Demands, by Brian Gardiner, Franklin Watts, Inc., 1990
Engines of Change: The American Industrial Revolution, 1790-1860, by Brooke Hindle and Steven Lubar, Smithsonian Institution Press, 1986
Medical Technology and Society, by Joseph D. Bronzino, Vincent H. Smith, and Maurice L. Wade, McGraw-Hill, 1990
Microbe Hunters, by Paul de Kruif, Harcourt Brace Jovanovich, 1926
Nuclear Choices: A Citizen's Guide to Nuclear Technology, by Richard Wolfson, MIT Press, 1991
The Nuclear Energy Option: An Alternative for the '90s, by Bernard L. Cohen, Plenum, 1990
Our Natural Resources and Their Conservation, 7th ed., by Harry Kircher, Donald Wallace, and Dorothy Gore, Interstate Publishers, 1991
Pasteur and Modern Science, by Rene Dubos, Science Tech, 1988
So Shall You Reap: Farming and Crops in Human Affairs, by Otto T. Solbrig and Dorothy J. Solbrig, Island Press, 1994
Supercomputing and the Transformation of Science, by William J. Kaufmann III and Larry L. Smarr, Scientific American Library, 1993
Superstuff! by Fred Bortz, Franklin Watts, Inc., 1990
Technologies Without Boundaries: On Telecommunications in a Global Age, by Ithiel De Sola Pool, Harvard University Press, 1990
Technology and the Future, 6th ed., by Albert H. Teich (Ed.), St. Martin's Press, 1993
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The Virus Invaders, by Alan E. Nourse, Franklin Watts, Inc., 1992
Works of Man, by Ronald W. Clark, Viking, 1985
So Shall You Reap: Farming and Crops in Human Affairs, by Otto T. Solbrig and Dorothy J. Solbrig, Island Press, 1994

The Mathematical World
(SFAA Chapter 9)

Archimedes' Revenge: The Joys and Perils of Mathematics, by Paul Hoffman, Fawcett Crest, 1988
Discovering Mathematics: The Art of Investigation, by A. Gardiner, Oxford University Press, 1987
An Equation That Changed the World: Newton, Einstein, and the Theory of Relativity, by Harald Fritzsch and translated, by Karin Heusch, University of Chicago Press, 1994
From Zero to Infinity, 4th ed., by Constance Reid, Mathematical Association of America, 1992
How to Lie with Statistics, by Darrell Huff, W. W. Norton, 1954
How to Solve It, by George Polya, Princeton University Press, 1945
How We Know: An Exploration of the Scientific Process, by Martin Goldstein and Inge F. Goldstein, Plenum, 1978
Innumeracy: Mathematical Illiteracy and Its Consequences, by John Allen Paulos, Hill and Wang, 1988
Lady Luck, by Warren Weaver, Dover, 1963
The Mathematical Universe, by William Dunham, John Wiley & Sons, 1994
On the Shoulders of Giants: New Approaches to Numeracy, by National Research Council, National Academy Press, 1990
One Two Three...Infinity, by George Gamow, Dover, 1947
Recent Revolutions in Mathematics, by Albert Stwertka, Franklin Watts, Inc., 1987
The Refrigerator and the Universe: Understanding the Laws of Energy, by Martin Goldstein and Inge F. Goldstein, Harvard University Press, 1993
Statistics Concepts and Controversies, by David S. Moore, W.H. Freeman and Co., 1979
Time Travel and Other Mathematical Bewilderments, by Martin Gardner, W. H. Freeman and Co., 1988
The World of Mathematics, by James R. Newman, Simon & Schuster, 1956

Historical Perspectives
(SFAA Chapter 10)

The Beak of the Finch: A Story of Evolution in Our Time, by Jonathan Weiner, Knopf, 1994
Blueprints: Solving the Mystery of Evolution, by Maitland A. Edey and Donald C. Johanson, Little, Brown, 1989
Charles Darwin: Evolution of a Naturalist, by Richard Milner, Facts on File, 1994
The Control Revolution: Technical and Economic Origins of the Information Society, by James R. Beniger, Harvard University Press, 1986
The Day the Sun Rose Twice, by Ferenc Morton Szasz, University of New Mexico Press, 1984
Discovery, Innovation and Risk: Case Studies in Science and Technology, by Newton H. Copp and Andrew W. Zanella, MIT Press, 1993
Discovery of Time, by Stephen Toulmin and June Goodfield, Harper & Row, 1965
Engines of Change: The American Industrial Revolution, 1790-1860, by Brooke Hindle and Steven Lubar, Smithsonian Institution Press, 1986
Ever Since Darwin: Reflections in Natural History, by Stephen Jay Gould, W. W. Norton, 1977

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The Fabric of the Heavens, by Stephen Toulmin and June Goodfield, Harper & Row, 1961
The History of Modern Science: A Guide to the Second Scientific Revolution, 1800-1950, by Stephen G. Brush, Iowa State University Press, 1988
The History of Science from 1895 to 1945, by Ray Spangenburg and Diane K. Moser, Facts on File, 1994
The History of Science from the Ancient Greeks to the Scientific Revolution, by Ray Spangenburg and Diane K. Moser, Facts on File, 1993
The History of Science in the Eighteenth Century, by Ray Spangenburg and Diane K. Moser, Facts on File, 1993
The History of Science in the Nineteenth Century, by Ray Spangenburg and Diane K. Moser, Facts on File, 1994
A History of the Sciences, by Stephen F. Mason, Collier, 1962
The Major Achievements of Science: The Development of Science from Ancient Times to the Present, by A. E. E. McKenzie, Iowa State University Press, 1988
Mammal Evolution: An Illustrated Guide, by R. J. G. Savage, Facts On File, 1986
Microbe Hunters, by Paul de Kruif, Harcourt Brace Jovanovich, 1926
New Theories on the Origins of the Human Race, by Christopher Lampton, Franklin Watts, Inc., 1989
Nuclear Choices: A Citizen's Guide to Nuclear Technology, by Richard Wolfson, MIT Press, 1991
Pasteur and Modern Science, by Rene Dubos, Science Tech, 1988
Physics for Poets, by Robert H. March, McGraw-Hill, 1992
Physics: From Newton to the Big Bang, by Albert and Eve Stwertka, Watts, 1986
Planet Earth, by Jonathan Weiner, Bantam, 1986
Radioactivity: From the Curies to the Atomic Age, by Tom McGowen, Watts, 1986
Science and the Making of the Modern World, by John Marks, Heinemann, 1983
Seven Ideas That Shook the Universe, by Nathan Spielberg and Bryon D. Anderson, Wiley, 1987
The Virus Invaders, by Alan E. Nourse, Franklin Watts, Inc., 1992
Works of Man, by Ronald W. Clark, Viking, 1985
The World of Microbes, by Howard Gest, Science Tech, 1987

Common Themes
(SFAA Chapter 11)

Charles Darwin: Evolution of a Naturalist, by Richard Milner, Facts on File, 1994
The Common Sense of Science, by Jacob Bronowski, Harvard University Press, 1978
The Control Revolution: Technical and Economic Origins of the Information Society, by James R. Beniger, Harvard University Press, 1986
Cycles of Nature: An Introduction to Biological Rhythms, by Andrew Ahlgren and Franz Halberg, National Science Teachers Association, 1990
Diatoms to Dinosaurs: The Size and Scale of Living Things, by Chris McGowan, Island Press, 1994
Engineering and the Mind's Eye, by Eugene S. Ferguson, MIT Press, 1992
Engines of Change: The American Industrial Revolution, 1790-1860, by Brooke Hindle and Steven Lubar, Smithsonian Institution Press, 1986
Knowledge and Wonder: The Natural World as Man Knows It, by Victor F. Weisskopf, Doubleday, 1979
Man on Earth, by John Reader, University of Texas Press, 1988
Metaman: The Merging of Humans and Machines into a Global Superorganism, by Gregory Stock, Simon & Schuster, 1993
Our Natural Resources and Their Conservation, 7th ed., by Harry Kircher, Donald Wallace, and Dorothy Gore, Interstate, 1991
Powers of Ten: A Book about the Relative Size of Things in the Universe and the Effect of Adding Another Zero, by Philip and Phylis Morrison and the office of Charles and Ray Eames, Scientific American Library, 1994
The Scientific Attitude, 2nd ed., by Frederick Grinnell, Guilford Press, 1992
The Search for Solutions, by Horace Freeland Judson, Holt, Rinehart and Winston, 1980
On the Shoulders of Giants: New Approaches to Numeracy, by National Research Council, National Academy Press, 1990
Supercomputing and the Transformation of Science, by William J. Kaufmann III and Larry L. Smarr, Scientific American Library, 1993
The World of Mathematics, by James R. Newman, Simon & Schuster, 1956

Habits of Mind
(SFAA Chapter 12)

How to Lie with Statistics, by Darrell Huff, W. W. Norton, 1954
Innumeracy: Mathematical Illiteracy and Its Consequences, by John Allen Paulos, Hill & Wang, 1988
Inventors at Work: Interviews with 16 Notable American Inventors, by Kenneth A. Brown, Tempus, 1988
A Mathematician Reads the Newspaper, by John Allen Paulos, Basic Books, 1995
Pasteur and Modern Science, by Rene Dubos, Science Tech, 1988
A Physicist on Madison Avenue, by Tony Rothman, Princeton University Press, 1991
The Refrigerator and the Universe: Understanding the Laws of Energy, by Martin Goldstein and Inge F. Goldstein, Harvard University Press, 1993
The Science Gap: Dispelling the Myths and Understanding the Reality of Science, by Milton A. Rothman, Prometheus Books, 1992
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You Know What They Say.... The Truth about Popular Beliefs, by Alfie Kohn, HarperCollins, 1990

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National Research Council. (1996). *National science education standards*. Washington, DC: National Academy Press.
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Internet Resources

Project 2061, AAAS
http://www.aaas.org/project2061/2061main.htm

Science and Mathematics Education Resources
http://www-hpcc.astro.washington.edu/scied/science.html

ERIC/CSMEE
http://www.ericse.org

Acknowledgment

This Digest has been adapted from information first presented in an article published in *Science Books & Films*, Volume 32, Number 4 (May, 1996), Page 97. *Science Books & Films* is a review journal published by the American Association for the Advancement of Science. The complete Trade Books Database mentioned in this Digest is available from Oxford University Press (1-800-451-7556), along with several other resources for teachers, on Project 2061's CD-ROM and print tool, *Resources for Science Literacy: Professional Development*.

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